phor, or strophanthus, will be indicated for the attack; while angina pectoris on account of the spasm will call for vasodilators such as amyl nitrite or nitro-glycerin. It is not infrequent for the subject of coronary spasm to suffer also from a weak heart and then a combination of heart stimulant and antispasmodic is demanded. Between the attacks, the treatment is the same as that recommended in cases of chronic myocarditis and arteriosclerosis. A well-regulated diet is of the utmost importance; avoidance of mental and physical strain, and exercise, carefully adapted to the individual, are also advised. Arsenic and the prolonged use of iodids in small doses will often be found to have a beneficial effect on both cardiac muscle and the blood vessels. Lastly, we should not neglect the elimination of toxic substances resulting from physiologic activity or food metabolism.

RESISTANCE TO CANCER.

H. Gideon Wells, Chicago (*Journal A. M.A.* May 29), notes the still unsatisfactory results in the surgery of cancer, and asks if we have any right to expect enough better results to preclude the desire to find some other means than surgery for its relief. He admits that there seem to be at present some facts in the biology of tumor growth that indicate a possibility of success in this search. To obtain a specific therapy for an infectious disease two methods are available. We may either stumble on a cure empirically or we may study the way the body defends itself and endeavor to assist or intensify this natural method. Perhaps we may consider Ehrlich's method of therapeutics, by more or less empiric methods obtaining something that has a favorable influence on an infection, and then enhancing this influence by adding various and sundry radicles to the original more or less hopeful appearing substance. The most logical method at present, Wells thinks, is to learn how the body cures itself when natural recovery takes place and then, if possible, to enhance this attempt. We may start with the assumption that no malignant growth ever succeeds in growing to the extent to which its natural proliferative power entitles it. One of the commonest occurrences in malignant tumors is necrosis or less extreme degenerative process, and such tumors are influenced by the state of health or vigor of their host. Their progress is generally much less rapid in the old than in the young. The fact that the rate of growth of cancer is in direct proportion to the nourishment and vitality of the patient, quite the opposite from what occurs in infectious diseases, would seem to make for the non-parasitic nature of such growths. Of greater interest to us are the instances in which malignant tumors show healing changes, independent of such conditions, which may appear as retardation of growth or recurrence after removal retrogressions of secondary growths after removal of the primary tumor, of disappearance of portions of tumor tissue after an incomplete palliative operation or even spontaneous healing of a primary tumor without operative intervention. Total healing without operation and without recurrence is practically unknown, but this does not necessarily mean that it may not occasionally occur. Two cases are referred to which suggest that when cancer follows chronic trauma, the defensive mechanism of the body may be able, in the early stages to overcome the cancerous proliferation if only the original irritant is removed. A number of other cases are reported from various authorities of spontaneous healing of cancer, but the evidence concerning the healing of portions of carcinomas left after operations is far better than of cases in which healing has occurred when no operation has been done. A large part of the paper is taken up with references to cases of these forms of healing, and he reproduces the notes of Dr. Alexander Harvey of a case which he has had a chance to study, in which the secondary growths disappeared after the removal of the primary one, and the autopsy revealed the scars. The patient died, with symptoms resembling uremic coma, very probably from a cerebral lesion, after eighteen months of apparent health succeeding the operation. The examination of the head itself was not permitted. Other similar or somewhat similar cases of other surgeons are also referred to. Just how the removal of the primary growth thus influences the metastases is hard to say, but Wells suggests, as possible, a sort of autoimmunization from cancer substance forced into the circulation by the operative procedure. As supporting this view he adduces a suggestive case described by Mackey. The condtions under which metastases are formed is also another source of evidence of the resistance of the body to cancer. The least resistant organs are the ones that are affected. Just now our chief hope lies in experimental work with transplanted tumors in animals, in which, besides a natural congenital immunity to some extent, there is sometimes produced a varying degree of acquired immunity, both active and passive, the first more successfully than the last. There is, however, some evidence that the blood of animals spontaneously recovering from tumors may render animals more or less resistant and even cause healing of tumors in inoculated animals. All these accumulated observations during the few recent years of cancer research give much hope that eventually we may do something for the cancer patient besides radical operation.

NOTES ON RECENT THERAPY.

Hirschfeld (1) emphasizes the importance for therapy, in diseases of the blood and the blood forming organs, of our present views as to the regeneration of the blood in normal and pathological conditions. At present, for example, there is no solid ground for the theory that increase in the size of the liver and the spleen, and multiplication of the leucocytes, in myelogenous leukemia, should be considered as reparative processes, and the same is true for multiplication of lymphocytes in the lymphatic form of leukemia. Large lymph node tumors, which do not yield to other measures, may properly be the subject of surgical treatment, unless the tendency to hemorrhage is strong. In pernicious anemia we consider the changes in the bone marrow as an effort at repair, and suppose that the newly formed cells are subjected to injurious influences after they have reached the general circulation. But if we regard the marrow as the site of the pathological process, the place where the injurious influences act, then it is reasonable to treat the case by the X-ray applied to the bones. This may affect the toxins there advantageously, but, on the other hand, there is a risk of preventing the regeneration of blood cells. The increase in the size of the liver should not be combated, for this is almost certainly reparative, both the liver and the spleen tending to revert to their embryonic function of blood cell formation.

The action of the X-ray upon the blood and the bone marrow has been studied by Aubertin and Beaujard (2). The effect upon lymphoid tissue is well enough understood, but what occurs in the bone marrow and the blood cells is still unknown, chiefly for want of a method of determining the dosage. After exposing animals to the X-ray treatment of moderate therapeutic dosage (9 guinea pigs), and killing them at periods of two hours to twenty-three days afterward, they determined that the effect of the rays is very different according as it is applied to lymphoid tissue or the marrow. Single treatments caused long persistent blood changes, at first a transitory increase in the leucocytes and then a leucopenia interrupted by periods of leucocytosis. The changes were not due to increased destruction of white cells in the spleen, and they occur in spite of hyperlasia in the marrow. Many de-